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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Xavier Blin

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3743

22852

7590

04/28/2010

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EXAMINER

SILVERMAN, ERIC E

ART UNIT

PAPER NUMBER

1618

MAIL DATE

DELIVERY MODE

04/28/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/528,835	<b>Applicant(s)</b> BLIN ET AL.	
	<b>Examiner</b> ERIC E. SILVERMAN	<b>Art Unit</b> 1618	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 85-88,90,93,95-143 and 145-184 is/are pending in the application.
- 4a) Of the above claim(s) 101-103,117-134,137-140 and 176-184 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16,85-88,90,93,95-100,104,135-137 and 141-175 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2-19-10</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 85-88, 90, 93, 95-143, and 145-184 are pending. Claims 101-103, 117-134, 137-140, and 176-184 are withdrawn. Claims 85-88, 90, 93, 95-100, 104-116, 135-137, and 141-175 are treated on the merits.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 85-88, 90, 93, 95-100, 104-116, 135-137, and 141-175 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The independent claims recite "theoretical glass transition temperature." The specification defines this term (abbreviated Tg) as follows:

$$\frac{1}{T_g} = \sum_i (\omega_i / T_{g_i}),$$

$\omega_i$  being the mass fraction of the monomer  $i$  in the block in question and  $T_{g_i}$  being the glass transition temperature of the homopolymer of the monomer  $i$ .

The term "theoretical glass transition temperature" renders the claim indefinite for several reasons. First, the formula as written is incomprehensible, and seems to be a typographical error. Which side of the formula (or both sides?) contains the term  $1/i$ ?

Art Unit: 1618

The term  $1/i$  cannot be written as being a denominator for both sides of the formula with a single division line.

Second, the claim as a whole does not "particularly point out and distinctly" claim the nature of the constituent monomers of the copolymer. The nature of the monomers is only defined based on the theoretical Tg of the polymer block that the monomers constitute. The theoretical glass transition temperature of the blocks appears to be a function of the glass transition temperatures of homopolymers of the individual monomers that constitute the block. But the glass transition temperature of a homopolymer is not a simple constant. For example, Tg of a homopolymer is known to depend on the molecular weight of the homopolymer. *Nojiri*. Further the relationship between Tg and molecular weight is ill-defined, and depends on how the polymer was made, how the Tg is measured, and whether the polymer is exposed to air, moisture, or plasticizer. *Nojiri, Erichsen, Cortazar*. Indeed, even Fox's equation (as it is depicted in the Cortazar reference) is not accurate all of the time, but is only accurate if Tg1 is approximately equal to Tg2. *Cortazar* at 151. Because none of these parameters are defined in the specification, the artisan would not know what the Tg of a hypothetical homopolymer of one or more of the constituent monomers of the blocks are, and thus would not know what the theoretical Tg is either.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 85-88, 90, 93, 95-100, 104-116, 135-137, and 141-175 remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The rejection is maintained for reasons of record.

### ***Response to Arguments***

Applicants' arguments are unpersuasive. Applicants argue that the theoretical Tg of a block can be readily calculated from values that are generally available: the Tg's of homopolymers of the constituent monomers. Thus, according to Applicants, the artisan would easily be able to make the polymers of the invention.

In response, Applicants have provided no evidence that the Tg's of homopolymers of constituent monomers are readily available. On the contrary, the evidence that is of record, Cortazar, Nojiri, and Erichsen, demonstrate that the Tg of a polymer is a complicated parameter that depends not only on the identity of the monomer but also on the molecular weight of the homopolymer, how the homopolymer is made or processed, to what extent (if any) the homopolymer was exposed to air or moisture, and other factors. Indeed, the art is so unpredictable that the nature of these relationships is unclear. Nojiri, for examples, explains that the Flory relationship between molecular weight and Tg applies in some situations but not in others. However, Nojiri does not answer the question of when Flory's relationship applies and when it does not. Further, Cortazar explains that the relationship between the Tg of a

Art Unit: 1618

mixture of copolymer and the Tg of a constituent is not a simple one; the equations that define that relationship vary depending on the nature of the monomers and other factors. Applicant's response does not address this documented unpredictability in the art, nor does it address the moderate level of skill of the artisan.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC E. SILVERMAN whose telephone number is (571)272-5549. The examiner can normally be reached on Monday to Thursday 7:00 am to 5:00 pm and Friday 7:00 am to noon.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Hartley can be reached on 571 272 0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eric E Silverman/

Primary Examiner, Art Unit 1618

Application/Control Number: 10/528,835  
Art Unit: 1618

Page 6